Health Canada Santé Canada

Guidelines for Tanning Salon Owners, Operators and Users

Canada

Guidelines for Tanning Salon Owners, Operators and Users

A Guideline published in collaboration with the Federal Provincial Territorial Radiation Protection Committee

Our mission is to help the people of Canada
maintain and improve their health.

Health Canada

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Acknowledgments

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Preface

Exposure to ultraviolet A and B radiation can cause sunburn, premature skin ageing, skin cancers, cataracts and other eye and skin diseases. It has also been shown that UV can weaken the body's immune system.

If a person chooses to acquire or enhance a tan using a tanning facility (sunlamp or tanning bed), it is important that this person be aware of the hazards involved so she can make an informed decision about the amount of exposure she receives.

This booklet is designed to give owners , staff and users of tanning salons a fundamental understanding of ultraviolet radiation and its effects on people. It discusses the risks of tanning, provides information on certain products that increase that risk, and provide a list of general guidelines for tanning salon owners and personnel. The final section contains a series of questions for tanning salon personnel to test their knowledge and understanding of the information in this booklet.

The owner of a tanning salon and its staff have to use only lamps that are complying with the federal regulation under the *Radiation Emitting Devices (RED) Act* so they should know the regulations and refer to them for any question. Owners and operators may refer to this document or to the public health departments in their area, which are good sources of reference. However, following the guidelines listed in this document does not relieve the operator from the obligation to take any additional measures necessary to minimize health hazards in their establishment.

These guidelines have been prepared from similar documents published by Saskatchewan and British Columbia. They have also been reviewed by and are published in collaboration with the Federal Provincial Territorial Radiation Protection Committee.

Glossary of Terms

Delayed tanning – a type of tanning produced by UVB appearing a few days after exposure and lasting up to a few weeks. This process results in an increased number of melanocytes in the skin and their melanin production and its oxidation.

Dermis – lowest (innermost) layer of cells in the skin under the epidermis.

Epidermis – outer layers of skin in which melanin is found, and where tanning occurs.

Erythema – the medical term for inflammatory redness of the skin. It is the result of an exposure to ultraviolet radiation, particularly UVB. It is commonly called "sunburn".

Immediate tanning – tanning process (mainly triggered by UVA) that darkens only the melanin pigment already present in the skin.

Melanin – pigment in the skin that becomes darker when oxidised under the effect of ultraviolet radiation.

Melanoma – most serious form of skin cancer, malignant and often fatal.

Photokeratitis and **photoconjunctivitis** – painful injuries to the cornea and conjunctiva caused by overexposure to ultraviolet radiation.

Stratum corneum – tough outer layer of dying skin cells.

UVA – ultraviolet radiation (sometimes called "long wave" radiation – 320 to 400 nanometres) which has the ability to penetrate the dermis. UVA have to be a 1000 times more intense than UVB to give the erythema level. It is the most common radiation in commercial tanning equipment and is responsible for the darkening of the melanin already in the skin. An intense exposure to UVA can result

in burns in sensitive people. UVA rays have an effect on premature skin ageing due to their penetration in the dermis. Most of the tanning beds emit between 7-20 mW/cm² in UVA which is 8 times more than the sun at noon in the summer. Some facials could emit even more UVA.

UVB – ultraviolet radiation (sometimes called "short wave" radiation - 280 to 320 nanometres) that mostly penetrates the epidermis. UV-B rays are responsible for sunburns (being 1000 times more erythemally effective than UVA) as well as for delayed tanning that appears after 2 or 3 days and last for a longer period of time. UVB is found at varying levels in all commercial tanning devices. Always remember that B in UVB is for burn. Some lamps can emit as much as 10 times more UVB radiation than others so they can cause serious burn in a very short period of time .

UVC – ultraviolet radiation (100 – 280 nanometres) that is very dangerous to all forms of life, even with only very short exposures. UVC radiation from the sun is completely absorbed by the earth's atmosphere. Modern tanning equipment should not emit UVC radiation or at least comply to the UVC/UVB ratio dictated in the *RED Act*.

RISKS OF TANNING

Sunburn

Sunburn (or erythema) is an inflammatory redness of the skin, caused by too much exposure to UV radiation, particularly UVB radiation. The small blood vessels in the skin dilate and increase the blood flow to the skin's surface, making it red and painful. This reaction can be almost immediate in severe cases, or may develop up to 24 hours later in less severe cases of overexposure.

Premature Aging

Ultraviolet radiation causes premature aging effects such as skin wrinkling and hardening.

Skin Cancer

Skin cancer is the most common form of cancer in Canada. In 2002, there will be more than 72,000 new cases of this increasingly prevalent skin disease, including 3,900 malignant melanoma. Amongst the 68,000 non melanoma skin cancer there is a ratio of 4 to 1 of Basal Cell Carcinoma (BCC) on Squamous Cell Carcinoma (SCC). More than ever, skin cancer seems to occur in younger individuals.

Squamous and basal cell cancers are the most common, but rarely fatal, forms of skin cancer. Exposure to UV radiation can cause these forms of cancer.

Malignant melanoma is a less common, but potentially deadly, type of skin cancer. Melanoma has been linked to intense intermittent and long-term exposure to ultraviolet radiation during childhood.

The risk of developing skin cancer increases as total exposure to UV radiation increases. People with fair skin who burn easily are also more at risk of developing skin cancer.

Eye Problems

Ultraviolet radiation may cause painful temporary injuries to the cornea and conjunctiva called photokeratitis and photoconjunctivitis. These conditions may develop from 2 to 24 hours after exposure, but usually occur within 6 to 12 hours. UVA radiation may cause eye aging effects, such as browning of the lens and its loss of elasticity. Overexposure to UVB seems to be partly responsible for the appearance of cataracts in the lens. Retina damage is mostly caused by blue light in the visible spectrum.

TANNING SAFETY GUIDELINES

Owners/operators of tanning salons must be aware of and adhere to the pertinent regulations under the federal *Radiation Emitting Devices Act (RED Act)*. In addition, operators should follow the guidelines listed below, which have been developed specifically for tanning salon operations.

1. It is recommended that tanning clients be informed of these guidelines and advised to consider discussing the risks of artificial tanning with their family physicians.

2. All sunlamps sold in Canada, including tanning beds, must comply with the regulations specified for sunlamps under the federal government's *RED Act*. Owners must check with their equipment supplier to ensure that sunlamps, tanning beds and any associated apparatus being purchased and used in their salon, are in compliance with the *RED Act*.

3. Knowledgeable operators or staff members who can inform and assist the public in the safe use of tanning devices should always be on premises during business hours. Staff should be familiar with these guidelines, and have completed with success the questionnaire at the back of this booklet.

4. It is recommended that suntan salon operators ascertain a client's ability to tan, history of sunburns, history of skin infections, rashes or other conditions and use of certain medications or cosmetics to prevent photoxic and photoallergic reactions. Client records should be kept. This information is to be used for exposure planning and to help clients understand how these factors interact with ultraviolet radiation.

5. People with sensitive skin who always burn and never tan should be advised by salon operator not to use tanning units.

Anyone who has a skin infection, rash or other skin condition should not use a tanning salon without first consulting a doctor.

6. Children under 16 years of age should not use tanning equipment and depending on each province or territory regulation on minority, a minor should have a parental written con: nt.

7. Know your UV light bulbs:

   Maximum exposure times suggested for different skin types depend on the strength and type of ultraviolet emissions from the light bulbs used in each individual piece of tanning equipment. There are many different models and brands of ultraviolet light bulbs available on the market, producing varying intensities and emitting different amounts of UVA and UVB radiation.

   While all pieces of tanning equipment are required to carry specific information about maximum exposure times and minimum intervals between exposures, this information is based on the bulbs provided with the original equipment at the time of sale. The replacement of bulbs in tanning equipment that have different - and often higher – levels of ultraviolet A and B than the original bulbs, should never happen. Cases of overexposure and burns from UV radiation have occurred as a result of clients being exposed to tanning equipment which has had its original bulbs replaced with newer, more powerful bulbs that don't comply with the federal regulation .

   Operators should endeavour to ensure that replacement bulbs identical to the original bulbs supplied with the tanning device at the time of sale, are used. When replacement bulbs identical to the original bulbs are used, the client can rely on the manufacturer's information provided with the tanning device.

   Operator should ensure that:

   a) The recommended maximum exposure time is not increased to compensate for decreasing UV intensity as bulbs age.

b) Maximum exposure time should comply with the manufacturer recommendation. Clients should know that UVA tanning equipment exposure times are different than those recommended for higher intensity UVB equipment.

8. Owner should ensure that ultraviolet radiation warning labels, in conformity to the *RED Act*, designed to warn client of the usage of ultraviolet lamps and the harmful effects and danger for the health, are well posted on each type of tanning devices. A summary of these guidelines should be posted in plain view and easily readable at all tanning locations within the facility, and in the client reception area as well.

9. Each tanning device can be easily turned off by the person who is being exposed, without the need to disconnect the electrical plug or remove the ultraviolet lamp (a requirement of *RED Act* regulations).

10. The operator should provide each client/customer with an ultraviolet radiation safety eyewear which covers the eyes securely with instructions on how to wear it.

    Protective eyewear used with sunlamps or tanning beds must meet two criteria (derived from the *RED Act* regulations):

    a) the user must be able to see through the eyewear clearly enough to read the labels and operate the controls on the tanning equipment;

    b) the eyewear must attenuate the shortwave ultraviolet radiation (200-320 nm) by a factor of at least 1,000, and attenuate the longwave ultraviolet radiation (320-400 nm) by a factor of at least 100.

11. A physical barrier like a clear UV-transmitting acrylic cover should always be in place between the lamps and the person being exposed to UV radiation, covering the top section of a two part hinged tanning beds. This barrier will prevent injury to

the user of the equipment in case of accidental lamp breakage. It will also guard against thermal burns from close contact with the bulbs.

12. Whenever maintenance is being performed on tanning equipment (e.g., changing UV bulbs, cleaning equipment, etc.), employees should turn off the equipment. If the bulbs have to be on, they should use protective eyewear and clothing to minimize their exposure.

13. Adequate ventilation is provided in such a way that the temperature of the tanning booth does not exceed 30 °C.

14. Clients are advised that they may have a delayed, adverse reaction to UV exposure like red, irritated and watering eyes or an itching skin rash or even a sunburn. This delayed reaction can take anywhere from less than an hour to as long as a day and a half to develop. If a serious adverse reaction results, they should be advised to consult their doctor. They should also be asked to notify the tanning salon operator of their reaction. Upon receipt of notification of an adverse reaction, the owner/operator should investigate the incident and implement whatever modification is needed.

    All such incidents shall be documented and these documents shall be available to an officer on request. Where an injury to a person is reported to the owner/operator by a duly qualified medical practitioner as a result of an exposure to the tanning equipment under the owner's control, the owner shall inform the health department immediately or any other health authority.

15. Infection control:

    Ensure that common contact surfaces, including protective eyewear, are disinfected between each use, with a low level disinfectant.

Appendix A

THE TANNING PROCESS

Skin is made up of basically two layers, the epidermis (outer layer) and the dermis (inner layer). The innermost section or dermis is formed of tissues containing nerves, blood vessels, lymphatics and fatty tissue. The outer layer or epidermis is made up of a series of layers. Cells are created in the bottom or innermost layer of the epidermis. As cells age, they travel from the innermost layer of the epidermis to the outer surface of the skin where they die. This surface layer (or stratum corneum) forms a tough outer protective covering. As the cells move outward, they lose moisture, flatten and eventually flake off the surface of the skin. This process takes about 28 days.

Tanning

There are two effects that occur in the skin following exposure to UV radiation. When the skin is exposed to ultraviolet radiation, a slight immediate pigment darkening is sometimes observable, it is called immediate tanning. This results from darkening of the melanin pigment that is already present in the epidermis as it absorbs some of the UVA radiation. This tan is only temporary, and fades within 3 to 36 hours after exposure.

A second process known as "delayed tanning" occurs in some individuals, not in every white individual, when the skin is exposed to UVB radiation. This process causes two responses. First, more melanocytes (skin cells capable of producing melanin pigment) are produced at the base of the epidermis, and each melanocyte produces

more melanosomes containing the melanin pigment. These melanin containing units begin to distribute themselves throughout the layers of the skin, as they work their way toward the keratinocytes at the surface of the skin. This greater presence of melanin-containing cells causes the skin to appear darker in colour. Second, the tough outer or surface layer of dying skin cells thickens and absorbs more of the hazardous shortwave UVB radiation. This second, two-part process takes one or more days to happen, and produces a noticeable tan within a few days that can last for weeks or even months.

Appendix B

SOURCES AND EFFECTS OF ULTRAVIOLET RADIATION

Wavelength	UVC 100-280 nm
Photon	more energetic
Sources	■ Sun (UVC are absorbed by oxygen molecules, ozone and water vapour in the high atmosphere) ■ germicidal lamps ■ Arc welding equipment ■ HID lamps ■ Medical and industrial lasers
Depth of Penetration	■ Photons from 100-200 nm absorbed in the air ■ Photons from 200-280 nm absorbed by the ozone layer ■ Absorbed in the epidermis by keratin ■ Does not penetrate into the dermis
Effects	■ Cellular DNA non protected: epithelium, cornea and bacteria

UVB	UVA
280-320 nm	**320-400 nm**
	less energetic
■ Sun (until 5% of UV radiation reaching the earth, wavelength >297)	■ Sun (most important part of natural UV radiation, at least 95%)
■ germicidal lamps	■ "Black light"
■ Arc welding equipment	■ germicidal lamp
■ HID lamps	■ Arc welding equipment
■ Phototherapeutic lamps	■ HID lamps
■ Medical and industrial lasers	■ Phototherapeutic lamps
■ Artificial tanning equipment (sunbeds)	■ Artificial tanning equipment (sunbeds)
■ Photons between 280-297 nm absorbed by the ozone layer	■ Not absorbed by ozone layer
■ Penetrate into dermis	■ Penetrates skin deeper than UVB and UVC
■ Production of vitamin D_3 and delayed tanning	■ Immediate tanning
■ Acute and chronic biological effects	■ Promote carcinogenic effects of UVB
■ Sunburn, immuno-suppression, cellular damage, skin cancer, solar urticaria, premature skin ageing, photokeratoconjunctivitis, cataract, pterygium and solar retinitis	■ Thermal burns
	■ Sunburn, immuno-suppression, cellular damage, photoallergy, phototoxicity, premature skin ageing, photokerato-conjunctivitis, cataract, pterygium and solar retinitis

Appendix C

PROTECTIVE EYEWEAR FOR SUNLAMPS

Protective eyewear used with sunlamps or tanning beds must meet the following two criteria:

1. Allow the user to see clearly enough to read the labels and operate the controls (see *RED Act*).

2. The eyewear must attenuate ultraviolet radiation B by a factor of at least 1,000 and attenuate the ultraviolet A radiation by a factor of at least 100 (see *RED Act*).

Appendix D

PRODUCTS THAT INCREASE SENSITIVITY TO ULTRAVIOLET RADIATION

Many products, including prescribed medications, over-the-counter patent medicines, and a wide range of personal care products can increase the skin sensitivity to UV radiation. This can result in photosensitivity, an intense reaction of the skin to ultraviolet radiation which can cause burning (or erythema) in a much shorter time period than would normally be expected.

Photosensitivity can be caused by products applied directly to the skin or from medications or other substances that have been ingested.

Because there are literally hundreds of known photosensitizing agents under these general categories, clients taking any medications or using any other products (some listed below), should be advised to consult a physician or pharmacist before tanning.

List of Photosensitizing Drugs

(This list is only informative)

The table that follows lists some drugs and other agents that have been reported to cause photosensitivity reactions. Those marked with an asterisk are more frequent causes of reactions. Phototoxic

drugs used for therapeutic purposes such as the psoralens, trioxsalen (Trisoralen) and methoxsalen (Oxsoralen), used for vitiligo and psoriasis, and coal tar (Zetar, and others), used for psoriasis, are not included.

Some agents that may cause photosensitivity reactions

* Reactions occur more frequently.

(The Medical Letter, Vol. 37 (issue 946), April 14, 1995)

Anticancer drugs

Dacarbazine (DTIC-Dome)
Fluorouracil (Fluoroplex, and others)
Flutamide (Eulexin)
Methotrexate (Folex, and others)
Vinblastine (Velban, and others)

Antidepressants

Amitriptyline (Elavil, and others)
Amoxapine (Asendin, and others)
Clomipramine (Anafranil)
Desipramine (Norpramin, and others)
Doxepin (Adapin, and others)
Imipramine (Tofranil, and others)
Maprotiline (Ludiomil, and others)
Nortriptyline (Aventyl, and others)
Phenelzine (Nardil)
Protriptyline (Vivactil)
Trazodone (Desyrel, and others)
Trimipramine (Surmontil)

Antihistamines

Cyproheptadine (Periactin, and others)
Diphenhydramine (Benadryl, and others)

Antihypertensives

Captopril (Capoten)

Diltiazem (Cardizem, and others)
Methyldopa (Aldomet, and others)
Minoxidil (Loniten, and others)
Nifedipine (Procerdia, and others)

Antimicrobials

Ciprofloxacin (Cipro)
Clofazimine (Lamprene)
Dapsone (generic)
* Demeclocycline (Declomycin, and others)
* Doxycycline (Vibramycin, and others)
* Enoxacin (Penetrex)
* Flucytosine ((Ancobon)
Griseofulvin (Fulvicin-U/F, and others)
* Lomefloxacin (Maxaquin)
Minocycline (Minocin, and others)
* Nalidixic acid (NegGram, and others)
Norfloxacin (Noroxin)
Ofloxacin (Floxin)
Oxytetracycline (Terramycin)
Pyrazinamide (generic)
Sulfonamides
Tetracycline (Achromycin and others)
Trimethoprim (Proloprim, and others)

Antiprasitic drugs

Chloroquine (Aralen, and others)
Quinine (many manufacturers)
Thiabendazole (Mintezol)

Antipsychotic drugs

Chlorpromazine (Thorazine, and others)
Fluphenazine (Permitil, and others)
Haloperidol (Haldol, and others)
Perphenazine (Trilafon, and others)
* Prochlorperazine (Compazine, and others)
Thioridazine (Mellaril, and others)

Thiothixene (Navane and others)
Trifluoperazine (Stelazine, and others)
Triflupromazine (Vesprin)

Diuretics

Acetazolamide (Diamox, and others)
Amiloride (Midamor, and others)
Bendroflumethiazide (Naturetin, and others)
Benzthiazide (Exna)
* Chlorothiazide (Diuril, and others)
* Furosamides (Lasix, and others)
* Hydrochlorothiazide (HydroDIURIL, and others)
Hydroflumethiazide (Diucardin, Saluron)
Methyclothiazide (Aquatensen, and others)
Metolazone (Mykrox, Zaroxolyn)
Polythiazide (Renese)
Triamterene (Dyrenium)
Trichlormethiazide (Metahydrin, and others)

Hypoglycemics

Acetohexamide (Dymelor)
Chlorpropamide (Diabinese, and others)
Glipizide (Glucotrol, and others)
Glyburide (DiaBeta, and others)
Tolazamide (Tolinase, and others)
* Tolbutamide (Orinase, and others)

Nonsteroidal anti-inflammatory drugs

Diflunisal (Dolobid)
IbuProfen (Motrin, and others)
Indomethacin (Indocin, and others)
Ketoprofen (Orudis, and others)
Nabumetone (Relafen)
Naproxen (Naprosyn, and others)
Phenylbutazone (Butazolidin, and others)
* Piroxicam (Feldene, and others)
Sulindac (Clinoril, and others)

Sunscreens

* Aminobenzoic acid (PABA – 405 Solar Cream)
  Avobenzone (Photoplex; Shade UVAGuard)
  Benzophenones (Bain de Soleil; Solbar, and others)
  Cinnamates (Bull Frog; Coppertone, and others)
  Homosalate (Coppertone; Tropical Blend, and others)
  Menthyl anthranilate (Hawaiian Tropic, Neutrogena, and others)
* PABA esters (Tropical Blend, Presun, and others)

Others

  Alprazolam (Xanax, and others)
  Amantadine (Symmetrel, and others)
* Amiodarone (Cordarone)
  Benzocaine (many manufacturers)
  Benzoyl peroxide (Oxy 10, and others)
* Bergamot oil, oils of citron, lavender, lime, sandalwood, cedar (used in many perfumes and cosmetics); also topical exposure to citrus rind oils)
  Carbamazepine (Tegretol, and others)
  Chlordiazepoxide (Librium, and others)
  Clofibrate (Atromid-S, and others)
  Contraceptives, oral
  Desoximetasone (Topicort, and others)
  Disopyramide (Norpace, and others)
  Etretinate (Tegison)
  Fluorescein (Fluorescite, and others)
  Gold Salts (Myochrysine, and others)
  Hexachlorophene, (pHisoHex, and others)
  Isotretinoin (Accutane)
* 6-methylcoumarin (used in perfumes, shaving lotions and sunscreens)
* Musk ambrette (used in perfumes)
* Promethazine (Phenergan, and others)
  Quinidine sulphate and gluconate (many manufacturers)
  Tretinoin (Retin-A)
  Trimeprazine (Temaril)

Appendix E

RADIATION EMITTING DEVICES ACT – SUNLAMPS REGULATION

A summary of the federal *Radiation Emitting Devices Act* and Sunlamps Regulation requirements is presented here for general information only. It is not the legal text; for complete detailed information, please contact the Consumer and Clinical Radiation Protection Bureau at Health Canada.

Regulations

(Required in the *Radiation Emitting Devices Act*, section 13.)

13. (1) The Governor in Council may make regulations

(a) prescribing classes of radiation emitting devices for the purposes of this *Act*;

(b) prescribing standards regulating the design, construction and functioning of any prescribed class of radiation emitting devices for the purpose of protecting persons against genetic or personal injury, impairment of health or death from radiation;

(c) exempting any radiation emitting device or class of radiation emitting device from the application of all or any of the provisions of this *Act* or the regulations and prescribing the conditions of that exemption;

(d) respecting the labeling, packaging and advertising of radiation emitting devices, and the use of any material in the construction of any radiation emitting device, for the purpose of protecting persons against genetic or personal injury, impairment of health or death from radiation;

(e) prescribing the information that must be shown on any label or package and the manner in which that information must be shown;

(f) requiring persons who manufacture, sell, lease, import into Canada or otherwise deal with any radiation emitting device to maintain such books and records as the Governor in Council considers necessary for the proper enforcement and administration of this *Act* and the regulations;

(g) prescribing the content of and the method of sending a notification in case defect or non-compliance;

(h) respecting the powers and duties of inspectors and analysts and the seizure, taking away, detention, forfeiture and disposition of radiation emitting devices; and

(i) generally, for carrying out the purposes and provisions of this *Act*.

Sale, Lease and Importation Prohibitions

(Required in the *Radiation Emitting Devices Act*, section 4.)

4. Except as authorized by regulations made by the Governor in Council, no person shall sell, lease or import into Canada a radiation emitting device if the device

(a) does not comply with the standards, if any, prescribed by the Governor in Council and applicable thereto; or

(b) creates a risk to any person of genetic or personal injury, impairment of health or death from radiation by reason of the fact that it

(i) does not perform according to the performance characteristics claimed for it,

(ii) does not accomplish its claimed purpose, or

(iii) emits radiation that is not necessary in order for it to accomplish its claimed purpose.

Deception

(Described in the *Radiation Emitting Devices Act*, section 5.)

5. (1) No person shall label, package or advertise a radiation emitting device in a manner that is false, misleading or deceptive or is likely to create an erroneous impression regarding its design, construction, performance, intended use, character, value, composition, merit or safety.

Notification

(Described in the *Radiation Emitting Devices Act*, section 6.)

6. (1) Where a person who is the manufacturer or importer of a radiation emitting device becomes aware, after the device has left the person's premises, of the fact that the device

(a) does not comply with the standards, if any, prescribed by the Governor in Council and applicable thereto, or

(b) creates a risk to any person of genetic or personal injury, impairment of health or death from radiation by reason of the fact that it

(i) does not perform according to the performance characteristics claimed for it,

(ii) does not accomplish its claimed purpose, or

(iii) emits radiation that is not necessary in order for it to accomplish its claimed purpose,

the person shall forthwith notify the Minister.

(2) Where the Minister determines,

(a) after being notified or

(b) through the Minister's own investigation, research, inspection or testing,

that a radiation emitting device falls under paragraph 6.(1)(a) or (b), the manufacturer or importer of the device shall, if directed by the Minister, notify such persons as the Minister requires of the defect or non-compliance, by such method, giving such details and within such time period as are specified by the Minister.

Definition of Sunlamps

(Provided in Schedule I of the *Radiation Emitting Devices Regulations*)

11. Sunlamps, being devices that are

(a) equipped, or intended to be equipped, with one or more ultra-violet lamps, and

(b) designed to induce skin tanning or other cosmetic effects and are represented as inducing such effects but not including any such device represented for use in the production of therapeutic effects for medical purposes.

Sunlamp Regulations

(Provided in Part XI of the *Radiation Emitting Devices Regulations*)

Interpretation

1. In this Part and in item 11 of Schedule I,

"double-contact medium screw lampholder" means a lampholder described in Double-Contact Medium Screw Lampholder (ANSI)

C81.62-1991, Standard Sheet 2-158-1, a standard published by the American National Standards Institute Inc.; (douille à vis moyenne (contact double))

"exposure position" means any location, orientation, place or distance relative to the ultraviolet radiating surfaces of the sunlamp at which it is recommended by the manufacturer that the user be exposed; (position pendant l'exposition)

"irradiance" means radiant power incident per unit area expressed as watts per square centimetre (W/cm2); (éclairement énergétique)

"maximum exposure time" means the longest time interval for continuous exposure recommended by the manufacturer of a sunlamp; (durée maximale d'exposition)

"maximum timer interval" means the longest time interval setting on the timer of a sunlamp; (intervalle maximal de la minuterie)

"minimum interval between consecutive exposures" means the shortest time interval between two consecutive exposures recommended by the manufacturer of a sunlamp; (intervalle minimal entre des expositions consécutives)

"protective eyewear" means any device designed to be worn by the user of a sunlamp to reduce the radiation reaching the eyes either directly or indirectly; (dispositif de protection des yeux)

"single-contact medium screw lampholder" means a lampholder described in Single-Contact Medium Screw Lampholder (ANSI) C81.62-1991, Standard Sheet 2-157-1, a standard published by the American National Standards Institute Inc.; (douille à vis moyenne (contact unique))

"spectral irradiance" means the irradiance resulting from radiation within an infinitesimally small wavelength range, expressed as watts per square centimetre per nanometre (W/cm2/nm); (éclairement énergétique spectral)

"spectral transmittance" means the spectral irradiance transmitted through protective eyewear divided by the spectral irradiance incident on the protective eyewear; (transmittance spectrale)

"timer" means any device that is incorporated into a sunlamp and is capable of terminating the emission of ultraviolet radiation from the sunlamp at the end of a preset time interval; (minuterie)

"ultraviolet lamp" means any device that is designed to produce ultraviolet radiation in the wavelength range from 200 nm to 400 nm; (lampe à rayonnements ultraviolets)

"wavelength" means a wavelength as measured in air; (longueur d'onde)

Standards of Design and Construction

2. (1) Every sunlamp shall be designed and constructed in such a manner that, under the conditions of use specified by the manufacturer, it functions in accordance with the standards of functioning described in section 4 for as long as the sunlamp has its original components or replacement components recommended by the manufacturer.

(2) Every sunlamp shall be designed and constructed in such a manner that

(a) all marks, labels and signs are permanently affixed to and clearly visible on the external surface when the sunlamp is assembled for use; and

(b) all controls, meters, lights or other indicators are readily discernible and clearly labeled to indicate their function.

(3) Every sunlamp shall have, on its external surface, the following information clearly legible and readily accessible to view by the user immediately before using the sunlamp:

(a) the name and address of the manufacturer;

(b) the model designation, the serial number and the month and year of manufacture;

(c) the recommended exposure positions and the directions for determining the recommended exposure positions;

(d) a warning that the use of exposure positions other than the recommended exposure positions may result in overexposure;

(e) the maximum exposure time in minutes;

(f) the minimum interval between consecutive exposures;

(g) the type and model designation of each ultraviolet lamp intended to be used in the sunlamp unless the sunlamp is manufactured, maintained and serviced by the same manufacturer; and

(h) an electro-optical radiation warning sign designed in accordance with section 5 of this Schedule.

(4) Every sunlamp shall be designed and constructed to include the following safety features:

(a) a control by which the sunlamp may be easily turned off by the person being exposed at any time without disconnecting the electrical plug or removing the ultraviolet lamp or lamps; and

(b) a timer that satisfies the standards of functioning specified in subsection 4(2).

(5) Every ultraviolet lamp intended for use in a sunlamp shall be designed and constructed in such a manner that it cannot be inserted and operated in a single-contact medium screw lampholder or a double-contact medium screw lampholder.

(6) Every sunlamp shall be designed and constructed in such a manner that failure or malfunction of any component of the sunlamp does not result in non-compliance of the sunlamp with the standards of functioning specified in section 4.

(7) Every sunlamp shall be accompanied by sufficient sets of protective eyewear that meet the standards of functioning specified

in subsection 4(3) to at least equal the maximum number of persons who may, at the same time, be exposed to ultraviolet radiation from the sunlamp, as recommended by the manufacturer of the sunlamp.

(8) Every sunlamp shall have the electro-optical radiation warning sign described in section 5 permanently affixed to and clearly visible on the external surface of the sunlamp.

(9) Every ultraviolet lamp intended for use in a sunlamp or any packaging uniquely associated with an ultraviolet lamp shall have a label that contains

(a) the words "DANGER—Ultraviolet radiation. Follow instructions. Use only in fixture equipped with a timer. DANGER — ultraviolets. Veuillez suivre les instructions. À n'utiliser qu'avec un dispositif pourvu d'une minuterie"; and

(b) the model designation.

(10) Subsection (9) does not apply to an ultraviolet lamp that is designed and manufactured for use in a sunlamp that is maintained and serviced by the same manufacturer.

3. Every sunlamp shall be equipped with

(a) instructions for the operation and safe use of the sunlamp that includes statements respecting

(i) the exposure positions and directions for determining them,

(ii) the maximum exposure time,

(iii) the minimum interval between consecutive exposures,

(iv) the maximum number of persons who may, at the same time, be exposed to ultraviolet radiation from the sunlamp, as recommended by the manufacturer of the sunlamp, and

(v) an electro-optical radiation warning sign designed in accordance with section 5 of this Part;

(b) instructions for obtaining repairs and recommended replacement components and accessories that are compatible with the sunlamp, including protective eyewear, ultraviolet lamps, timers, reflectors and filters, in order that, if installed or used as directed the sunlamp continues to comply with the provisions of this Part; and

(c) a warning that the instructions accompanying the sunlamp should always be followed to avoid or minimize potential injury.

Standards of Functioning

4. (1) Every ultraviolet lamp intended for use in a sunlamp shall function in such a manner that, at any distance in any direction from the sunlamp, the irradiance within the wavelength range from 200 nm to not more than 260 nm does not exceed 0.003 of the irradiance within the wavelength range from 260 nm to not more than 320 nm.

(2) The timer required by paragraph 2(4)(b) of this Part shall be so designed as to

(a) be adjustable to preset times and have a maximum timer interval not exceeding the maximum exposure time;

(b) have a margin of error not greater than 10 per cent of the maximum timer interval of the sunlamp;

(c) not automatically reset and therefore cause radiation emission to resume when the sunlamp emissions have been terminated by the timer; and

(d) not preclude a user of a sunlamp from resetting the timer before the end of the preset timer interval.

(3) The protective eyewear required by subsection 2(7) of this Part shall have a spectral transmittance not exceeding a value of 0.001 over the wavelength range from 200 nm to not more than 320 nm and a value of 0.01 over the wavelength range from 320 nm

to not more than 400 nm and shall be sufficient over wavelengths greater than 400 nm to enable the user to see clearly enough to read the labels and reset the timer.

Warning Sign Specifications

5. The electro-optical radiation warning sign required by paragraph 2(3)(h) and subparagraph 3(a)(v) of this Part is a sign that

(a) is shown in two contrasting colours;

(b) is clearly visible and identifiable from the exposure position;

(c) bears the words "WARNING—ULTRAVIOLET RADIATION—FOLLOW INSTRUCTIONS—FAILURE TO USE PROTECTIVE EYEWEAR MAY RESULT IN SEVERE BURNS OR OTHER EYE INJURY—IF DISCOMFORT DEVELOPS, DISCONTINUE USE AND CONSULT A PHYSICIAN. — ATTENTION—RAYONNEMENTS ULTRAVIOLETS —VEUILLEZ SUIVRE LES INSTRUCTIONS—SANS DISPOSITIF DE PROTECTION DES YEUX, CE PRODUIT PEUT CAUSER DES BRÛLURES OU LÉSIONS OCULAIRES GRAVES—SI VOUS SENTEZ UN MALAISE, EN DISCONTINUER L'USAGE ET CONSULTER UN MEDECIN";

(d) incorporates a statement, in English and French, to indicate that

(i) as with natural sunlight, overexposure can cause eye injury and sunburn,

(ii) repeated exposure may cause premature aging of the skin and skin cancer,

(iii) medications or cosmetics applied to the skin may increase sensitivity to ultraviolet light,

(iv) a person who does not tan in the sun most likely will not tan from the use of this device,

(v) a person having a history of skin problems or having a skin that is specially sensitive to sunlight should consult a physician before use, and

(vi) overexposure should be avoided;

(e) has no outer dimensions less than two centimetres; and

(f) is designed in accordance with the following diagram:

Appendix F

FEDERAL PROVINCIAL TERRITORIAL RADIATION PROTECTION COMMITTEE (FPTRPC)* POSITION STATEMENT ON ULTRAVIOLET RADIATION

1. There is ample scientific evidence demonstrating that excessive exposure to ultraviolet radiation (UVR), from sunlight or from artificial sources, causes acute and chronic adverse health effects. The main organs affected by UVR are the skin and the eyes. There is increasing evidence indicating that UVR also acts as a systemic immuno-suppressor.

2. Exposure to solar and artificial ultraviolet radiation is widely recognized as an important, and preventable, cause of skin cancer. There is significant scientific evidence indicating that

* The Federal Provincial Territorial Radiation Protection Committee comprises a forum of delegates from each of the following government organizations: Atomic Energy Control Board; Health Canada (Consumer and Clinical Radiation Protection Bureau) and provincial and territorial radiation protection programs. It was established to support federal, provincial and territorial government radiation protection agencies with their respective mandates in Canada. The mission of the committee is to advance the development and harmonization of practices and standards for radiation protection within federal, provincial and territorial jurisdictions.

long-term exposure to UVR without adequate eye protection also plays a role in the development of some types of cataract and other eye and skin conditions.

3. The main source of ultraviolet radiation in the environment is the sun. Artificial sources of UVR can be found in the work and recreation environments. Sunlamps and sunbeds account for significant additional UVR exposure of users.

4. The UVR dose to the population can be significantly decreased by applying simple strategies and measures to reduce sun exposure. The FPTRPC recommends that protective measures against excessive exposure to solar and artificial ultraviolet radiation, such as those contained in its overview document, be implemented by health, education, labour and recreation authorities in all provinces and territories and adopted by the general public.

5. The FPTRPC recommends that particular attention be given to the reduction of UVR exposure among the following groups:

   - **Children**. Their skin is usually more sensitive to UVR than adult skin.

   - **Sensitive people**. People with lightly pigmented skin, hair and eyes are at higher risk of developing skin cancer.

6. The FPTRPC recommends that tanning and the use of sunlamps and sunbeds, particularly by minors, be discouraged. The FPTRPC further recommends that provincial and territorial authorities evaluate the need for operator-based regulation of tanning salons.

Appendix G

TANNING SALON OPERATOR KNOWLEDGE QUESTIONNAIRE

The owner or manager of the facility should ensure that each operator completes the following questionnaire to evaluate their knowledge about UV radiation.

It is recommended that the owner or manager retain copies of the completed questionnaire in their appropriate employee training file. It is also recommended that operators not be permitted to work with clients until they can answer all of the questions in the questionnaire correctly.

Operator's name: _____

Date completed: _____

1. Name the three wavelength regions that ultraviolet radiation may be divided into.
2. Which of these three wavelength regions of ultraviolet radiation is now most prevalent in commercial tanning equipment emissions?
3. Briefly, what is the skin's reaction that causes erythema?
4. Name one painful eye injury resulting from ultraviolet radiation exposure.
5. Of UVA and UVB, which penetrates most deeply into the layers of the skin?
6. Of UVA and UVB, which is responsible for long term or long lasting tans?
7. What is the correct medical term for skin reddening or sunburn?
8. List two common categories of drugs or medications which may increase sensitivity to ultraviolet exposure.
9. The sun produces about 2.5 mW/cm^2 of UVA in summer around noon. How much UVA does a typical tanning bed produce?
10. What precautions should be taken by an employee when performing maintenance on any of the tanning equipment (e.g., changing UV bulbs, cleaning equipment, etc.)?

True or False

11. Most conventional commercial tanning devices emit some UVB radiation?

    ☐ True ☐ False

12. The risk of developing skin cancer will increase as total ultraviolet exposure is increased.

    ☐ True ☐ False

13. Cataracts are a long term chronic effect of ultraviolet radiation exposure of the eyes.

    ☐ True ☐ False

14. After using a commercial tanning facility, if a customer complains of red irritated and watering eyes, or an itching skin rash causing discomfort, the customer should be told that the cause may be related to ultraviolet exposure.

    ☐ True ☐ False

15. The customer should always wear protective eye-wear while using a tanning device at a commercial tanning facility.

    ☐ True ☐ False

16. A fair-skinned person with red or blond hair and freckles should be allowed to use a tanning unit.

    ☐ True ☐ False

17. Ultraviolet radiation is responsible for premature skin aging effects such as wrinkling and skin hardening.

    ☐ True ☐ False

18. UVA radiation exposure causes the skin to produce more melanin-producing cells, thus creating a longer lasting tan.

☐ True ☐ False

19. It is the customer's responsibility to ask the owner or operator for instructions on the proper use of tanning equipment.

☐ True ☐ False

Results: Correct Answers _____ Incorrect Answers _____

Comments: _____

_____

_____

_____

Owner's or manager's signature: _____

Date: _____

Appendix H

TANNING OPERATOR KNOWLEDGE – ANSWER KEY

1. **UVA**, **UVB** and **UVC** are the three ultraviolet radiation wavelength regions.
2. **UVA** and **UVB**: Commercial tanning equipment all emit primarily UVA radiation, with various amounts of UVB.
3. Erythema is the medical term for inflammatory redness of the skin. It is caused by UV Radiation. When this happens, erythema is commonly called "sunburn".
4. Photokeratitis and photoconjunctivitis (also known as welder's flash or snow blindness) are two painful eye injuries that can result from exposure to UV radiation.
5. **UVA** is the wavelength which penetrates most deeply into the skin
6. **UVB** causes long lasting tan by increasing the production of the melanin pigment in the skin.
7. Erythema occurs when the small blood vessels in the skin dilate and increase the flow of blood to the skin's surface.
8. Antibiotics, antihistamines, oral contraceptives and tranquillizers are some of the common classes of drugs which can increase the skin sensitivity to UV radiation. (See Appendix B for full list).

9. Tanning beds typically produce between 7 to 20 mW/cm² of UVA, which is as much as 3 to 8 times the UVA the sun produces at noon in the summer.

10. When maintenance is being performed on the tanning equipment, the employee should either turn off all the tanning bulbs while working on or around the equipment, or else wear protective eyewear and clothing to minimize their exposure.

True or False Questions

11. **True**

    All tanning lamps emit some UVB radiation, the form of ultraviolet radiation with the greatest capability of causing sunburns. All operators must be aware of the maximum exposure times for their clients, depending on their skin type and the intensity of the lamps used in their tanning equipment.

12. **True**

    The risk of developing skin cancer increases as total exposure to ultraviolet rays increases.

13. **True**

    Ultraviolet radiation exposure to the eyes cause cataracts, photokeratitis and other painful eye injuries.

14. **True**

    Operators should tell customers that exposure to ultraviolet radiation at a tanning salon can cause watering eyes, an itching skin rash or sunburn.

15. **True**

All customers must wear protective eye-wear while using tanning equipment.

16. **False**

Fair-skinned people with red or blond hair and freckles should not use a tanning device. Fair-skinned people are most at risk of burning and skin cancer. Children, the elderly and those who always burn or don't tan well should not use tanning units at all.

17. **True**

Ultraviolet radiation causes premature skin aging effects such as wrinkling and hardening of the skin.

18. **False**

Although radiation penetrates more deeply into the skin, it is mainly the UVB exposure that causes the skin to produce more melanin. UVB radiation is 1,000 times more likely to cause sunburn than the same intensity of UVA radiation.

19. **False**

Operators must provide customers with clear instructions on how to use tanning equipment, including maximum exposure times (based on their skin type) and the need to wear protective eye wear while tanning.